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ABSTRACT

In 1975, the British Columbia Research Council released a report entitled "The Impact of Community Colleges - A Study of the College Concept in British Columbia." One Chapter of the report is intended to provide a broad perspective of educational cost and finance, to relate these costs to government expenditure and economic output, and to make broad comparisons of costs between the major sectors of education and between institutions in the postsecondary area. One table purports to compare institutional costs and total cost for a full-time equivalent student for the B.C. colleges and universities. A detailed examination of the table in question indicates that: (1) a significant amount of the data reported was erroneous; (2) several of the underlying assumptions were fallacious; and (3) the data were not comparable. The results of recalculation of the analysis and the original table are presented for examination. It is recommended that a study of the type undertaken by the B.C. Research Council meet two fundamental requirements: (1) a pre-established methodology including standardized data requirements, and (2) a procedure for sending the preliminary calculations to each institution for examination. (Author/MSE)

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"...SIX IS FATAL..."

A Case Study of Inter-Institutional Cost Comparison

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" . . . SIX IS FATAL . . ."

A CASE STUDY OF INTER-INSTITUTIONAL COST COMPARISON

A SUMMARY OF AN ADDRESS GIVEN AT THE 16TH ANNUAL FORUM OF THE ASSOCIATION FOR INSTITUTIONAL RESEARCH MAY 5, 1976, HYATT HOTEL, LOS ANGELES, CALIFORNIA.

In December, 1975, the B.C. Research Council released a report entitled, "The Impact of Community Colleges - A Study of the College Concept in British Columbia." The report reflects the findings of a full year program designed and undertaken by the authors to evaluate the impact of British Columbia community colleges.

One chapter of the report entitled, "Financial Perspectives" is intended to provide a broad perspective of educational cost and finance, to relate these costs to government expenditure and economic output, and to make broad comparisons of costs between the major sectors of education and between institutions in the post-secondary area.

One table in this chapter of the report purports to compare "institutional cost" and "total cost" for a full-time equivalent student for the British Columbia colleges and universities. The table showed that the average "instructional cost per full-time equivalent student (F.T.E.)" was approximately $1,350 for the nine colleges and $2,700 for the three universities. Furthermore, the average "total cost per full-time equivalent student (F.T.E.)" was approximately $2,300 for the colleges and $4,950 for the universities.

Given the timing of the report and the self-evident public policy implications emerging from the table, an examination by the universities and Universities Council of the figures and the methodology used to arrive at them was immediately apparent.

A detailed examination of the table in question indicated that:

a) A significant amount of the data reported was erroneous.
b) Several of the underlying assumptions were fallacious.
c) The data were not comparable.

Among the more significant problems encountered were the following: First, the enrolment data for the universities were both incorrect and incomplete. Second, contrary to the footnote in the table, the college enrolments did include preparatory student enrolments as well as university transfer (academic) and career/technical programs. Third, contrary to caveats expressed in the paragraphs preceding the table, cost data for five of the nine colleges were inconsistent in that some included deficits from prior years, ancillary operations, vocational expenditures, expenditures for non-credit programs, etc.

Fourth, while the capital expenditures of the universities were included as part of the costs of their operation, the adopted procedure of equating capital grants in universities with debt service in the colleges (repayments of principle and interest on long-term capital borrowing) is neither appropriate nor accepted financial practice as a "suitable" 'average' means of accounting for capital expenditures.

The most serious deficiency is that the table in the report presented implies comparability yet no attempt is made to compare the cost per student of the first two years of general program instruction (i.e. Arts and Science) at the universities with the terminal two-year programmes at the colleges. The resultant comparisons of multi-discipline (e.g. Arts, Medicine, Agriculture, etc.) and multi-level (i.e. first year undergraduate through doctoral) universities with a comprehensive technical institute and with lower division two-year college operations is misleading, at best, especially with regards to "costs" per hypothetical "average" students. Comparability was intended by the published table; it was not achieved.

The results of our re-calculations of the B.C. Research Council analysis together with the original table are presented below. We urge you to reflect upon the impact of public policy that stems from each version.

	INSTRUCTIONAL COST $/F.T.E.		TOTAL COST $/F.T.E	
	B.C. RESEARCH COUNCIL	REVISED CALCULATIONS	B.C. RESEARCH COUNCIL	REVISED CALCULATIONS
All Colleges-average	$1,345	$1,409	$2,298	$2,082
Technical Institutions	1,520	1,607	2,169	2,086
Universities-average-All Levels	2,697	2,553	4,935	3,793
Universities-average-Lower Division	N/A *		N/A *	

* Not calculated.

Emerging out of the B.C. Research Council analysis and our response to it are several fundamental requirements for a study of this type. First is the need for agreement in a pre-established methodology including standardized data requirements. The second requirement is a procedure for sending the preliminary calculations to each institutions for vetting.

For the future, it is clear that even our re-calculation of the B.C. Research Council table is lacking. The issue being raised by the recent B.C. Research Council analysis is whether the academic transfer program of the colleges represents an economic substitute for the first two years of university. The issue is of critical importance to the colleges, the universities and the provincial government because of its significant and far reaching public policy implications.

The basis for our allocation of costs between lower division, upper division and graduate work was student contact hours. This method ignores both the question of relative effort required to teach the courses at the various levels as well as the faculty requirements for graduate student thesis supervision and research. Cleary, we are still comparing apples and oranges. A more satisfactory and more defensible although more involved procedure would be the undertaking of a comprehensive cost study involving as one of its components, a faculty activity analysis. Only in this way can a proper assessment of costs be attributed to lower, upper and graduate work.

" . . . SIX IS FATAL . . . "

A CASE STUDY OF INTER-INSTITUTIONAL COST COMPARISONS

> "Injuries have been coded according to the American Medical Association's Abbreviated Injury Scale. This scale ranks injuries in increasing severity from one to nine where one is minor, six is fatal and so on."[1]

INTRODUCTION

People seem to have an inherent faith in the validity of numerical data particularly when the number of digits seem to imply precision and significance. This, of course, only holds true when the data do not fly in the face of reason as is the case with the nine-point scale referred to in the above quotation. If six is fatal, it is hard to imagine what nine could possibly represent on that scale.

There are other statistical presentations which are not so humorous and which sometimes turn out to be fairly serious. The particular problem that we wish to focus upon was created by a recent publication of the British Columbia Research Council entitled The Impact of Community Colleges.[2] We chose this issue because it is illustrative of a particularly vexing class of problem faced by all institutional researchers.

GENESIS OF AN INSTITUTIONAL PROBLEM OR "HOW TO DEAL WITH WELL-MEANING BUT UNINFORMED AMATEURS"

Coincidentally coinciding with the National Meeting in Vancouver of the Association of Canadian Community Colleges, and with the provincial election in early December, 1975, the B.C. Research Council released its report entitled, "The Impact of Community Colleges - A Study of the College Concept in British Columbia." It is also important to note that within the ensuing three months the 1976/77 college and university budgets were to be established.

The report reflects the findings of a four year program designed and undertaken by the authors to evaluate the impact of British Columbia community colleges. Numerous studies and surveys were conducted as part of this research project. These measured the impact of the colleges on students, the educational system and the community. This, their final document, summarizes all of their findings from their numerous studies and surveys and seeks to draw them into an integrated whole.

One chapter of the report entitled "Financial Perspectives" is intended to provide a broad perspective of educational costs and finance, to relate these costs to government expenditure and economic output, and to make broad comparisons of costs between the major sectors of education and between institutions in the post-secondary area.

One table in this chapter of the report purports to compare "institutional cost" and "total cost" per full-time equivalent student for the British Columbia colleges and universities. The table, which is reproduced in full later in this paper, showed that the average "Instructional Cost per Full-Time Equivalent Student (FTE)"was approximately $1,350 for the nine colleges and $2,700 for the three universities. Furthermore, the average "Total Cost per Full-Time Equivalent Student (FTE)"was approximately $2,300 for colleges and $4,950 for the universities. Data on the latter measure (i.e. "total cost") ranged from a low of $1,600 per F.T.E. student at Vancouver Community College to a high of $5,437 per F.T.E. at the University of British Columbia.

Given the timing of the report and the self-evident public policy implications emerging from the Table, an examination by the universities and Universities Council of the figures and the methodology used to arrive at them was immediately apparent.

THE BRITISH COLUMBIA BACKGROUND TO THE LIMITED RESOURCE PROBLEM: OR "HEAR NO EVIL, SEE NO EVIL, SPEAK NO EVIL WEST OF THE CANADIAN ROCKIES"

Prior to 1963, the University of British Columbia was the only provincial university in the Province. Under the Universities Act of 1963, Victoria College, a unit of the University of British Columbia, was established as a separate university. Under that same act, Simon Fraser University was also established.

The first college grew out of the largest school system in the Province (Vancouver) in 1965. Between 1965 and 1971 eight more community colleges were established. In the past two years, four more community colleges have been established, all of which are located in rural centers. In addition, the British Columbia Institute of Technology and the Burnaby Vocational School also provide educational opportunities in the Province.

Different funding arrangements exist for the universities on the one hand and the colleges on the other. From 1963 through 1972, the universities independently submitted operating grant requests to the provincial government which determined the total operating grant to be awarded the three public universities. The total operating grant was then turned over to a Financial Advisory Board consisting of equal representation from the universities and appointees of the provincial government. The task of the Financial Advisory Board was to allocate the total grant among the three universities. With the election of the NDP government in 1972, legislation providing for the establishment of a Universities Council

was brought down. Since that time, the universities have made operating and capital submissions to the Universities Council who in turn have prepared a university wide submission to the government. In lieu of the Financial Advisory Board, the Universities Council is now charged with allocating the operating and capital grants among the universities.

The method of funding colleges is significantly different than that for universities. The budget for academic/technical instruction plus expenditures for administration, plant operation, library and student services are shared 60% Provincial funding and 40% local college district funding. Debt service and vocational education is 100% provincially funded while any shortfall in Ancillary Service operations, i.e. bookstore, food services, housing, and non-credit activities is funded entirely by the local college district.

With regard to the actual funding itself, it is fair to say that while both sets of institutions have been treated fairly relative to similar institutions in other provinces, there is considerable competition for funds between the universities and the colleges. This situation is aggrevated by the separate funding avenues available to the universities and the colleges.

Following the election of the Social Credit government in the fall of 1975, the handwriting was immediately on the wall: funding for education was going to be tight this year and even tighter next. This message emerged in the context of university operating grant requests for 1976/77 averaging in excess of 30% and the college requests which in some cases were 200% above their operating grant base in 1975/76.

THE IMMEDIATE INSTITUTIONAL RESPONSE or, "Hitting the Panic Button"

The table, purporting to compare[3] "institutional" and "total" costs at all British Columbia colleges and universities, came to us in a fashion that was guaranteed to get attention and immediate response. We were attending a committee meeting at the Universities Council of British Columbia (UCBC) and a member of the UCBC staff gave us a xerox copy of the table with the statement: "Could you check these data? This table has come to the attention of the Deputy Minister of Education and he wants to know if they are accurate."

Our first reaction was that we needed to determine how everything was calculated and the accuracy of the source data. We also had very little time in which to do this because in less than three weeks a provincial election was scheduled and compaign oratory was reaching its high point. We were concerned that these data, which appeared to be incorrect might be used to affect government policy and, subsequently, levels of funding to the colleges and universities.

There was simply not time to do anything else but a "quick and dirty" cost study. A properly conducted cost study would have a pre-established methodology and standard data requirements. It would also include a procedure for sending the preliminary calculations to each institution for vetting. This procedure was not followed in the original study and there was insufficient time in the situation now existing.

While we were in the process of vetting the data, the British Columbia Liberal Party campaign platform was published and widely distributed to every household in the Province. The platform highlights for education stated "Our emphasis for education should be shifted from the later years to the earlier years; from the secondary to the primary, from the universities to the colleges" (underlining ours). Furthermore, under the heading "Clean up Problems in Education" it said:

> "Universities are now spending from two to four times as much per student as are the community colleges. This should be corrected and made more equitable."

This quotation implies that the costs per student are for comparable levels of instruction. It was time to "hit the panic button!" Since No other cost study existed in B.C., the basis for this statement had to be the table in the B.C. Research publication. It is an interesting coincidence that the author of the chapter in question[4] is the president of the Liberal Party Association in his riding and the chairman of the B.C. Liberal Party Committee is the principal of one of the community colleges.

We began to study the publication, vet the data and re-calculate the expenditure per FTE student. The identical source documents were used and a concerted and detailed effort was made to ensure comparability. The results are strikingly different from those originally published.

We went one step further and attempted to calculate "costs" for each of the universities which were comparable to the "cost" data for the colleges. In particular, an attempt was made to estimate the expenditures per FTE student in the first two years of the basic programmes at each of the universities.

We urge you, the reader, to compare the conclusions drawn from each of the two versions of the results and reflect upon the impact of public policy that stems from each version.

VETTING THE SOURCE DATA AND RECALCULATING RESULTS OR, "LIES, DAMMED LIES, AND STATISTICS -- BEING CARELESS WITH THE TRUTH

A detailed examination of the table in question[5] indicates that:

a) a significant amount of the data reported are erroneous
b) several of the underlying assumptions are fallacious and,
c) the data are not comparable.

Factual Errors

1) All enrolment data for the universities are incorrect.
2) The table published implies that total enrolments are shown. In fact, enrolments for all institutions are "snapshots" of the winter session enrolment only. No enrolment is shown for inter-session, summer session, correspondence, or non-credit continuing education.
3) Contrary to table footnote 1 the college enrolments include preparatory student enrolments as well as university transfer (academic) and career/technical programmes.

4) The universities do have a generally accepted method for converting head-count enrolments into full-time equivalencies; it is true that colleges have no comparable standardized method.

5) Contrary to caveats expressed in the paragraphs preceding the table, cost data for five of the nine colleges are inconsistent in that some include deficits from prior years, ancillary operations, vocational expenditures, expenditures for non-credit programmes, etc.

6) In the Impact of Community Colleges the statement is made that

> "The capital expenditures of the universities normally represent a fairly stable proportion of their total budgets. Consequently, it was considered reasonable to include these as part of the costs of their operation."

This is incorrect. The capital expenditures of each of the universities for 1972-74 are as follows. (Percent of total expenditures is in parentheses);

	UBC	%	SFU	%	UVic	%
1972	$10,037,000	(9.5)	$ 902,000	(3.4)	$3,353,000	(14.1)
1973	11,849,000	(11.8)	646,000	(2.6)	1,773,000	(8.7)
1974	23,472,000	(22.1)	4,750,000	(17.3)	1,619,000	(8.3)

Fallacious Assumptions

1) The capital expenditures of the universities do not represent a stable proportion of their budget (see Factual Error #6). Furthermore, equating capital grants in the universities with debt services (repayments of principal and interest on long-term capital borrowing) is neither appropriate nor accepted financial practice as a "suitable" 'average' means of accounting for capital expenditures.

2) "It should be remembered that there are no generally accepted ways of relating part-time and full-time students, or even of comparing full-time students taking different programmes."

   This is simply not true. To the first point it should be noted that Statistics Canada has a standard practice of equating 3.5 part-time students to one full-time student for purposes of calculating full-time equivalency. As to the second point both British Columbia and Ontario universities have a well established system of weighting factors for comparing enrolments in different programmes for financial analysis purposes.

3) Comparability of data for B.C.I.T. is implied in the table yet capital expenditures were excluded for B.C.I.T. but included for the universities.

4) The table presented implies comparability yet no attempt is made to compare the costs per student of the first two years of general programme instruction (i.e. Arts

4) & Science) at the universities with the terminal two year programmes at the colleges.

Comparability

The resultant comparisons of multi-discipline (e.g. Arts, Medicine, Agriculture, etc.) and multi-level (i.e. first year undergraduate through doctoral) universities with a comprehensive technical institute and with lower division two-year college operations is misleading, at best, especially with regards to "costs" per hypothetical "average" students. It is difficult to imagine what the "average" university student represents considering the range of programmes and levels of instruction. Comparability was intended by the published table; it was not achieved.

Amended Calculations

The following two tables are presented as a summary statement concerning the validity of the original table. The first table is a copy of the original with all incorrect data and statements italicized for emphasis. The second table is the result of the same calculations usings correct data and comparable summations; the identical source data were used. The reader is urged to reflect upon the different conclusions drawn from each of the two tables.

TABLE 12-5

A COMPARISON OF ENROLMENTS AND COSTS IN BRITISH COLUMBIA'S COLLEGES,[1] TECHNICAL INSTITUTE AND UNIVERSITIES (1973-74)

INSTITUTION	ENROLMENT FULL-TIME	ENROLMENT PART-TIME	ENROLMENT TOTAL	ENROLMENT F.T.E.[2]	INSTRUCTIONAL COST TOTAL ($1,000)	INSTRUCTIONAL COST $/F.T.E.	TOTAL COST TOTAL ($1,000)	TOTAL COST $/F.T.E.
COLLEGES								
Camosun	921	640	1,561	1,134	1,763	1,555	2,571	2,267
Capilano	1,048	857	1,905	1,134	1,365	1,023	2,857	2,157
Cariboo	438	445	883	586	1,010	1,724	1,678	2,863
Douglas	1,434	1,618	3,052	1,973	2,977	1,509	5,683	2,880
Malaspina	603	946	1,549	918	1,355	1,476	2,351	2,561
New Caledonia	362	698	1,060	595	883	1,484	1,620	2,723
Okanagan	613	340	953	726	1,115	1,536	1,799	2,478
Selkirk	483	188	671	546	1,147	2,101	1,892	3,465
Vancouver (Langara Campus)	3,174	1,220	4,394	3,580	3,713	1,037	5,730	1,600
TOTAL	9,076	6,952	16,028	11,392	15,328	1,345	26,181	2,298
TECHNICAL INSTITUTE								
B.C.I.T.	3,027	4,607	7,634	4,179	6,354	1,520	9,065[3]	2,169
UNIVERSITIES								
U.B.C.	18,745	1,997	20,742	19,411	58,278	3,002	105,529	5,437
Simon Fraser	5,007	1,113	6,120	7,273	14,823	2,038	26,715	3,673
Victoria	4,601	950	5,551	4,918	12,118	2,464	23,711	4,821
TOTAL	28,353	4,060	32,413	31,602	85,219	2,697	155,955	4,935
GRAND TOTAL	40,456	15,619	56,075	47,174	106,901	2,266	191,201	4,053

1. Academic and career/technical only (vocational division excluded).
2. According to a general rule of thumb, 3 part-time students are equivalent to 1 full-time student. At B.C.I.T. where almost all part-time students are enrolled in the Extension Division (night school), the ratio of 4:1 is assumed.
3. Excluding capital expenditures.
4. Source: Dennison, John D., et al, The Impact of Community Colleges; A Study of the College Concept in British Columbia, (Vancouver. Canada. B. C. Research Council. November 1975)

AMENDED TABLE 12-5

A COMPARISON OF ENROLMENTS AND COSTS IN BRITISH COLUMBIA'S COLLEGES[1], TECHNICAL INSTITUTE AND UNIVERSITIES (1973-74)

INSTITUTION	ENROLMENT				INSTRUCTIONAL COST		TOTAL COST	
	FULL-TIME	PART-TIME	TOTAL	F.T.E.[2]	TOTAL ($1,000)	$/F.T.E.	TOTAL[3] ($1,000)	$/F.T.E.
COLLEGES								
Camosun	921	640	1,561	1,104	1,763	1,597	2,464	2,232
Capilano	1,048	857	1,905	1,293	1,365	1,056	2,409	1,863
Cariboo	438	445	883	565	1,010	1,788	1,318	2,332
Douglas	1,434	1,618	3,052	1,896	2,977	1,570	4.676	2,446
Malaspina	603	946	1,549	873	1,355	1,552	1,965	2,250
New Caledonia	362	698	1,060	561	883	1,574	1,399	2,494
Okanagan	613	340	953	710	1,008	1,420	1,460	2,056
Selkirk	483	188	671	537	1,147	2,136	1,818	3,385
Vancouver (Langara Campus)	3,174	1,220	4,394	3,523	4,080	1,158	5,517	1,566
TOTAL	9,076	6,952	16,028	11,062	15,588	1,409	23,026	2.082
TECHNICAL INSTITUTE	3,027	4,607	7,634	4,343[2]	6,978	1,607	9,058	2,086
UNIVERSITIES								
U.B.C. (lower division)	5,599	112	5,711	5,613[4]	9,138	1,628	14,758	2,629
Simon Fraser (lower division)	2,467	714	3,181	2,671[5]	6,886	2,578	11,143	4,172
Victoria (lower division)								
TOTAL-LOWER DIVISION	8,066	826	8,892	8,284	16,024	1,934	25,901	3,127
GRAND TOTAL	20,169	12,385	32,554	23,689	38,590	1,629	57,985	2,448

NOTES:

1. University Transfer (Academic), Career Technical and College Preparatory Programme enrolments only (vocational divisions excluded).
2. According to Statistics Canada conversion rules, 3.5 part-time students are equivalent to 1 full-time student; this ratio was used for B.C.I.T. as well.
3. Excluding Capital Expenditures.
4. If F.T.E.'s are calculated by Universities Council of British Columbia methodology which is based on "normal" full-time loads by faculty, program and year level, the results are as follows:

18,370	2,988	21,358	19,571	52,061	2,660	73,235	3,742
5,599	112	5,71:	5,669	9,138	1,612	14,758	2,603

5. If F.T.E.'s are calculated by Universities Council of British Columbia methodology which is based on "normal" full-time loads by faculty, program and year level. The results are as follows:

5,572	1,679	7,251	6,184	13,396	2,166	23,227	3,756
2,467	714	3,181	2,678	6,886	2,571	11,142.6	,161

6. Because its revised calculations are not yet available, data for the University of Victoria has been excluded from all of the calculations. However, we expect that inclusion of the University of Victoria figures would not significantly alter the above calculations.
7. Because we believe comparability was intended by the original published table, we have chosen to include only lower division university costs in the amended table. However, if we had strictly adhered to the format of the original table, the original calculations as amended would have shown the following:

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	ENROLMENT				INSTRUCTIONAL COST		TOTAL COST	
UNIVERSITIES	FULL-TIME	PART-TIME	TOTAL	F.T.E.[2]	TOTAL ($1,000)	$/F.T.E.	TOTAL[3] ($1,000)	$/F.T.E.
U.B.C.	18,370	2,988	21,358	19,224	52,061	2,708	73,235	3,809
Simon Fraser	5,585	1,682	7,251	6,083	13,396	2,202	23,227	3,818
Victoria	4,601	1,468	6,069	5,076	12,118	2,387	18,794	3,703
Total	28,556	6,138	34,678	30,383	77,575	2,553	115,256	3,793
GRAND TOTAL	40,659	17,697	58,340	45,788	100,141	2,187	147,340	3,218

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8. Revised calculations undertaken by Dr. Wm. Tetlow, Director, Office of Analysis and Planning, University of British Columbia, Dr. J. Chase, Director, Office of Analytical Studies, Simon Fraser University and Mr. J. Currie, Director of Institutional Analysis and Assistant to the President, University of Victoria.

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THE CONTINUING PROVINCIAL NEED OR, "HOW TO INFORM THE AMATEURS"

Emerging out of the B.C. Research Council analysis and our response to it are several fundamental requirements for a study of this type. First is the need for agreement on a pre-established methodology including standardized data requirements. The second requirement is a procedure for sending the preliminary calculations to each institution for vetting. Adoption of both of these requirements by the B.C. Research Council would have avoided the errors in enrolments and instructional and total dollars associated with the original table.

For the future, it is clear that even our re-calculation of the B.C. Research Council table is lacking. The issue being raised by the B.C. Research analysis is whether the academic transfer program of the colleges represents an economic substitute for the first two years of university. The issue is of critical importance to the colleges, the universities and the Provincial Government because of its significant and far reaching public policy implications.

The basis for our allocation of costs between lower division, upper division and graduate work was student contact hours. This method ignores both the question of relative effort required to teach the courses at the various levels as well as the faculty requirements for graduate student thesis supervision and research. Clearly, we are still comparing apples and oranges. A more satisfactory and more defensible although more involved procedure would be the undertaking of a comprehensive cost study involving

as one of its components, a faculty activity analysis. Only in this way can a proper assessment of costs be attributed to lower, upper and graduate work.

CONCLUSION

We have attempted in this paper to provide you with a case study of a type of problem which, we believe, is encountered with regrettable frequency by individual institutional researchers. Some persons will argue, no doubt, that we have overstated the potential impact of the original erroneous data or over-reacted to the incident or "problem." We disagree because our experience indicates that very far reaching actions and policies are adopted on the type of "evidence" presented in the B.C. Research Council publication.

On a nine-point scale we would, perhaps, be inclined to rate this problem as five BUT REMEMBER, on at least one scale "... six is fatal . . ."!

FOOTNOTES

[1]From a paper titled "Seat Belts in Canada - What are they good for?" by A. Carl Shields and L. Glen Watson, presented to the Roads and Transportation Association of Canada Conference in Calgary.

[2]Dennison, John D. et al, The Impact of Community Colleges; A Study of the College Concept in British Columbia, (Vancouver Canada, B.C. Research Council, November 1975)

[3]Dennison, et al, op. cit., Table 12-5, p. 135.

[4]Dennison, et al, op. cit., Chapter 12 "Some Financial Perspectives", pp. 126-140.

[5]Dennison et al, op. cit. , Table 12-5, page 135.